

**Ponderay Newsprint Company  
Notice of Construction  
Permit Review**

**WA 2-19**

**Contract # EP-D-14-032  
Subcontract # 8090-SCA**

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*Prepared for:*

**Jason Price**

Principal

Industrial Economics, Incorporated

2067 Massachusetts Avenue

Cambridge, MA 02140

and

**Toni Colón**

Tribal Outreach and Consultation Advisor

U.S. EPA

Mail Code: C304-01

109 T.W. Alexander Drive

Research Triangle Park, NC 27709

*Submitted by:*

**SC&a, inc.**

2200 Wilson Boulevard

Suite 300

Arlington, Virginia 22201

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Attachment 1: Nebraska Boiler PTE Calculations

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## 1. Introduction

The Kalispel Tribe in Usk, Washington requested information regarding the impacts of air pollution on tribal lands from the Ponderay Newsprint Company (PNC). PNC has applied to the Washington Department of Ecology (Ecology) for a Notice of Construction (NOC) for a log chipper and debarker (Chp/Dbrk) at their facility in Usk, Washington. The Kalispel Tribe has requested a review of the proposed NOC to better understand the impacts of PNC on the air quality of its tribal lands and how the facility has changed since it was originally constructed.

### 1.1. Ponderay Newsprint Company • Usk, WA

PNC operates a pulp and paper facility located at 422767 Highway 20 in Usk, Washington, where wood chips and recycled material are converted into newsprint. The facility is comprised of the following emissions units:<sup>1</sup>

- Nebraska Boiler
- Fluidized Bed Boiler (FBB)
- Thermo-mechanical Pulping Mill (TMP)
- Papermaking (PM)
- Wood Chip Handling
- Recycle Fiber Deinking (DI)
- Wastewater Treatment Plant (WWTP)

PNC contracted Plummer Forest Products (PFP) of Post Falls, Idaho to install and operate an electric log chipper and debarker, to generate wood chips for use in the pulp and paper mill.<sup>2</sup>

#### 1.1.1. Site Information

PNC is located in the southern part of Pend Oreille County, WA. Pend Oreille County is considered attainment/unclassified for every National Ambient Air Quality Standard (NAAQS). PNC is considered a Title V major source due to its potential-to-emit (PTE) for volatile organic compounds (VOC) and methanol, a hazardous air pollutant (HAP).

#### 1.1.2. Air Pollution Controls

PNC employs selective non-catalyst reduction (SNCR) to control nitrogen oxide (NO<sub>x</sub>) emissions and a baghouse to control particulate matter (PM) from the FBB. Ultra-low NO<sub>x</sub> burners are used on the Nebraska boiler.<sup>3</sup>

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<sup>1</sup> TVAOP No. 08AQ-E253 – April 22, 2010

<sup>2</sup> NOC Application – September 27, 2016

<sup>3</sup> Ecology Preliminary Determination for NOC 16AQ-E032

### 1.1.3. Emissions Monitoring

PNC utilizes a continuous emissions monitoring system (CEMS) for sulfur dioxide (SO<sub>2</sub>), a continuous ammonia analyzer, and a continuous opacity monitoring system (COMS) on the FBB and a NO<sub>x</sub> CEMS on the Nebraska Boiler.<sup>4</sup>

### 1.1.4. Emissions Modeling

If a new or modified source exceeds the small quantity emissions rate of Washington Administrative Code (WAC) 173-460-150, the impacts of the emissions must be modeled and compared to the acceptable source impact level (SIL) in WAC 173-460-150 or WAC 173-400-113(4)(a). The modeled emissions rates for the chipper/debarker project and applicable SIL are presented in Table 1.1.<sup>5</sup>

**Table 1.1 Chipper/Debarker Impact Analysis**

Pollutant	Averaging Period	Model Results	Source Impact Level <sup>†</sup>
PM <sub>10</sub>	24-hour	68.1 µg/m <sup>3</sup>	5 µgm/ <sup>3</sup>
PM <sub>10</sub>	Annual	Unknown <sup>‡</sup>	1.0 µgm/ <sup>3</sup>
PM <sub>2.5</sub>	24-hour	11.9 µg/m <sup>3</sup>	1.2 µgm/ <sup>3</sup>
PM <sub>2.5</sub>	Annual	0.40 µg/m <sup>3</sup>	0.3 µgm/ <sup>3</sup>

<sup>†</sup> From WAC 173-400-113(4)(a)

<sup>‡</sup> This value was not included in the NOC application.

Since the model results exceeded the SIL for each pollutant modeled, the air quality impacts from the entire facility, including the proposed chipper/debarker, and other sources were determined. The modeled emissions rates and applicable NAAQS are presented in Table 1.2.<sup>6</sup>

**Table 1.2 Facility-wide Impact Analysis**

Pollutant	Averaging Period	Model Results	Background Concentration <sup>†</sup>	Total	NAAQS
PM <sub>10</sub>	24-hour	51.0 µg/m <sup>3</sup>	78 µg/m <sup>3</sup>	129 µg/m <sup>3</sup>	150 µg/m <sup>3‡</sup>
PM <sub>2.5</sub>	24-hour	5.8 µg/m <sup>3</sup>	14 µg/m <sup>3</sup>	19.8 µg/m <sup>3</sup>	35 µg/m <sup>3‡</sup>
PM <sub>2.5</sub>	Annual	0.99 µg/m <sup>3</sup>	4.9 µg/m <sup>3</sup>	5.9 µg/m <sup>3</sup>	12 µg/m <sup>3‡</sup>

<sup>†</sup> Northwest International Air Quality Environmental Science and Technology Consortium NW Airquest

<sup>‡</sup> From WAC 173-476-100(1)

<sup>‡</sup> From WAC 173-476-110(1)

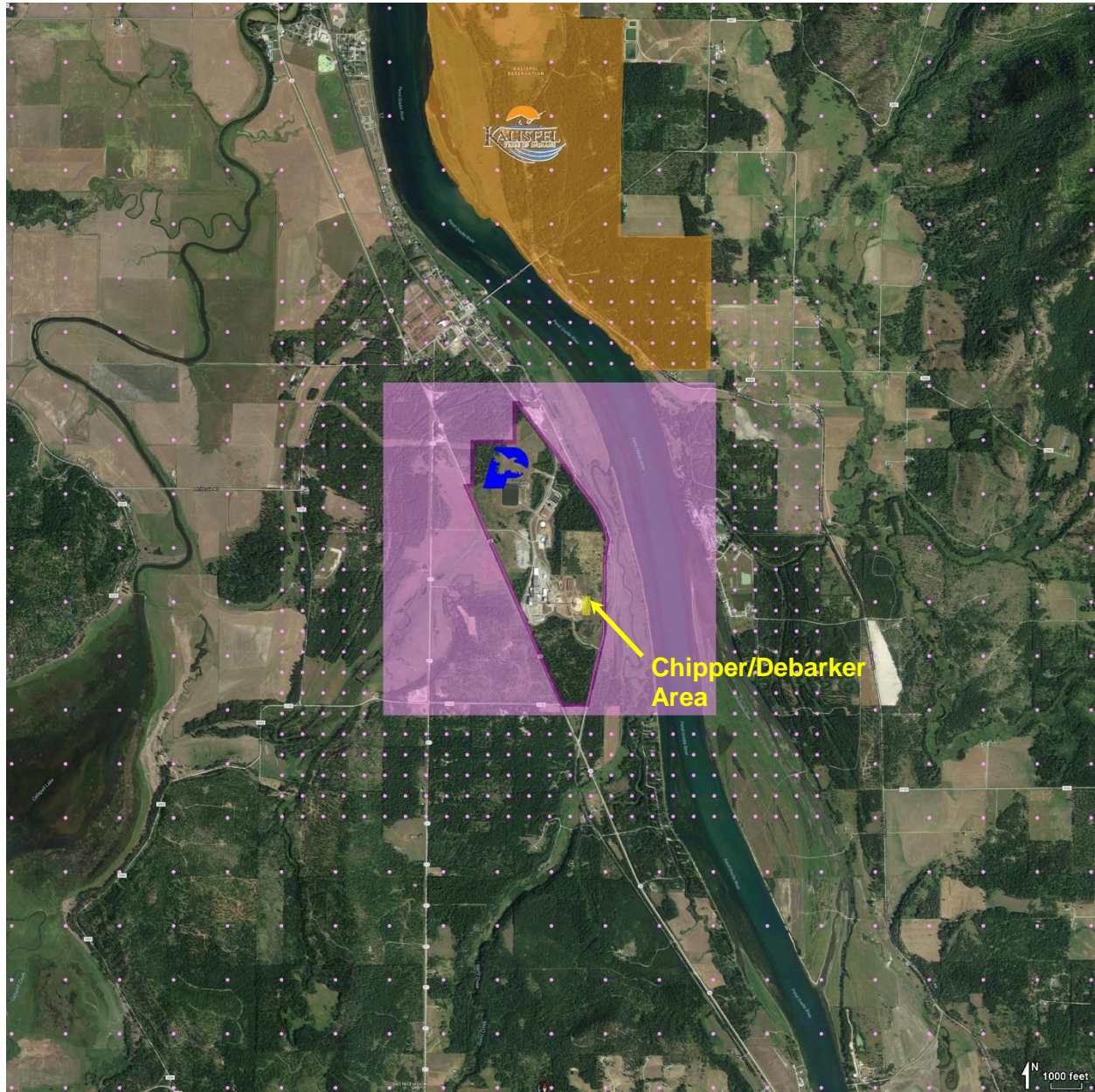
<sup>4</sup> Ecology Statement of Basis for TVAOP No. 08AQ-E253

<sup>5</sup> NOC Application – September 27, 2016

<sup>6</sup> NOC Application – September 27, 2016

The facility-wide impact analysis demonstrated that the entire facility would not cause or contributed to an exceedance of the PM<sub>10</sub> and PM<sub>2.5</sub> NAAQS. The NOC application included the methodologies, parameters, and assumptions used to develop the air models, but did not detail where in the 10 square kilometer (km<sup>2</sup>) square receptor grid that the maximum model results occurred. A map of the modeled area, using information from the NOC Application, is presented in Figure 1.1. The receptor grid included receptors within the Kalispel Tribal lands.

**Figure 1.1 Dispersion Modeling Domain**



**Orange Area:** Kalispel Tribal Lands

**Purple Dots:** Model Receptors (10 km<sup>2</sup>, centered on facility centroid)

**Yellow Area:** Chipper/Debarker Proposed Location



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## 1.2. Kalispel Tribe Concerns

Tribal concerns focus primarily on the ambient air quality impacts to tribal lands and air resources from PNC operations and expansions. There is also a concern with the compliance record for the facility.

## 2. Facility Compliance and Permit Status

SC&A conducted a review of publicly available data for the PNC facility, including permit applications, compliance documents, and news releases to determine the compliance and permit status for the facility.

### 2.1. Site Compliance Overview

PNC submitted an NOC application for a thermo-mechanical pulp in paper mill on April 23, 1985. The application included the TMP Mill and the Nebraska Boiler. Ecology did not issue an NOC or permit for the mill until December 7, 2000. Air emissions from the original facility would have included: carbon monoxide (CO), NO<sub>x</sub>, SO<sub>2</sub>, PM, VOC, and the HAP methanol.

Ecology issued Order No. DE95AQ-E108 to PNC on February 9, 1995, establishing a facility-wide NO<sub>x</sub> emissions limit and operational restrictions on propane combustion. These restrictions exempted the facility from a Federal (Title V) Air Operating Permit (TVAOP). These types of permits are commonly called “synthetic minor” permits. The synthetic minor permit limited propane combustion in the Nebraska boiler and the B&W Boiler, (installed after June 9, 1989), to reduce the facility PTE below the Title V applicability threshold of 100 tpy.<sup>7</sup>

On December 7, 2000, Ecology issued NOC 00AQER-1819 for the April 23, 1985 application for the Nebraska Boiler and for the proposed installation of the FBB.<sup>8</sup> The NOC established best available control technology (BACT) for both emissions units, as required by WAC 173-400-113(2). The Nebraska boiler was retrofitted with ultra-low-NO<sub>x</sub> burners to comply with a synthetic minor emissions limitation of 0.05 pounds of NO<sub>x</sub> per million British Thermal Units (lbs. NO<sub>x</sub>/mmBtu).<sup>9</sup>

PNC conducted an emissions test on the FBB on April 16, 2002. The FBB emissions test results exceeded the allowable emissions rates for PM<sub>10</sub> and NO<sub>x</sub> in NOC 00AQER-1819. On December 5, 2002, Ecology received an NOC application for installation of SNCR to control NO<sub>x</sub> emissions from the FBB. Ecology amended Order 00AQER-1819 to include an ammonia emissions limitation from the SNCR, as required by WAC 173-460-040(4). Ecology issued PNC a Notice of Violation (NOV) on March 13, 2003, for the exceedances<sup>10</sup> and issued an amended NOC 00AQER-1819 on July 11, 2003.<sup>11</sup>

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<sup>7</sup> Ecology Statement of Basis for TVAOP No. 08AQ-E253

<sup>8</sup> Ecology Statement of Basis for TVAOP No. 08AQ-E253

<sup>9</sup> Ecology Technical Support Document for Order 16AQ-E032

<sup>10</sup> Ecology Technical Support Document for Order 16AQ-E032

<sup>11</sup> Ecology Statement of Basis for TVAOP No. 08AQ-E253

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The B&W boiler was removed on October 31, 2005, and the PM, DI, and WWTP were installed before September 29, 2006.

On September 29, 2006, PNC submitted the results of VOC emissions testing to Ecology. The VOC emissions exceeded the emissions limits in Order 00AQER-1819, the VOC PTE exceeded the Title V major source threshold of 100 tons per year (tpy), and the VOC PTE was very close to the 250 tpy major source threshold for the prevention of significant deterioration (PSD) permitting program.<sup>12</sup> Ecology received a request to amend Order 00AQER-1819 to replace the synthetic minor restrictions with new synthetic minor operating restrictions and emissions limits to reduce the VOC PTE below the PSD major source threshold of 250 tpy; amended Order 00AQER-1819 was issued by Ecology on February 5, 2007. A Title V permit application was submitted and Ecology issued TVAOP No. 08AQE-253 on April 22, 2010.<sup>13</sup> Ecology also issued an NOV for the violations, which were settled on January 24, 2007, for a penalty of \$100,000 in Settlement Agreement and Agreed Order No. 3996.<sup>14</sup>

PNC submitted an initial notification on April 13, 1999, notifying Ecology that it was a minor source of hazardous air pollutants (HAPs) and not subject to the Pulp and Paper National Emissions Standards for HAPs (NESHAP). In 2008, U.S. EPA requested air emissions testing for the HAP methanol at the facility; the air emissions testing results showed potential fugitive emissions of methanol from the WWTP were 32.4 tpy, exceeding the major source threshold of 10 tpy for individual HAP. PNC submitted an updated initial notification on September 17, 2009, claiming that it was a major source of HAP.<sup>15</sup>

In November 2014, PNC contracted with Plummer Forest Products to install diesel engines to provide power to a temporary wood chipping and log debarking operation. PNC continued to operate the engine, wood chipper, and log debarker beyond the 12-month period allowed in Washington regulations for a temporary source. Ecology issued an NOV and a Settlement Agreement was issued with a penalty of \$24,000 on August 9, 2016.<sup>16</sup> Ecology received an NOC application on September 27, 2016, for the installation of a permanent, electrically powered wood chipper and log debarker.<sup>17</sup>

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<sup>12</sup> Ecology Technical Support Document for Order 16AQ-E032

<sup>13</sup> TVAOP No. 08AQ-E253 – April 22, 2010

<sup>14</sup> Ecology Statement of Basis for TVAOP No. 08AQ-E253

<sup>15</sup> Ecology Statement of Basis for TVAOP No. 08AQ-E253

<sup>16</sup> Ecology News Release – August 12, 2016

<sup>17</sup> Ecology Public Notice – January 4, 2017

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## 2.2. Permit Status

The facility has applied for an NOC for installation of an electric chipper/debarker and associated emissions units. Ecology issued a Preliminary Determination to approve the NOC in December, 2016, and the public comment period is from January 4, 2017 through February 3, 2017.<sup>18</sup>

PNC submitted a Title V permit renewal application on April 21, 2014.<sup>19</sup> The current TVAOP was issued by Ecology on April 22, 2010 and expired on April 21, 2015.<sup>20</sup> Since a timely TVAOP renewal application was submitted, PNC must comply with the expired TVAOP until the new TVAOP is issued.<sup>21</sup>

## 2.3. Air Emissions

The facility-wide PTE is provided in Table 2.1. The Nebraska Boiler was not included in the PTE submitted as part of the Title V permit application or included in the Ecology Statement of Basis for TVAOP No. 08AQE-253. The TVAOP states that coordinated operation of the FBB and Nebraska boilers are part of a site-specific operation and maintenance (O&M) plan, but does not prohibit simultaneous operation of both boilers.<sup>22</sup> The estimated PTE from the chipper/debarker project is provided in Table 2.2.

**Table 2.1 Facility-wide Potential-to-Emit for PNC**

Potential Emissions (tons/year) <sup>†</sup>						
Source	CO	NO <sub>x</sub>	PM	SO <sub>2</sub>	VOC	Methanol
FBB	70	84	12	54	0	N/A
TMP	N/A	N/A	1	N/A	204	1.5
DI	N/A	N/A	N/A	N/A	0.4	N/A
PM	N/A	N/A	1	N/A	23.1	4.5
Chp/Dbrk <sup>‡</sup>	N/A	N/A	40.3	N/A	0.01	N/A
WWT	N/A	2.6	0.2	0.2	14.9	32.4
Bldg.	0.6	N/A	N/A	N/A	5.1	0.6
<b>Total</b>	<b>70.6</b>	<b>86.6</b>	<b>54.5</b>	<b>54.2</b>	<b>247.5</b>	<b>39.0</b>
Nebraska <sup>¤</sup>	22.5	13.7	2.1	0.04	2.4	N/A

<sup>†</sup> PTE from April 21, 2010 Statement of Basis for TVAOP No. 08AQE-253

<sup>‡</sup> PTE from Technical Support Document for Order 16AQ-E032

<sup>¤</sup> PTE from AP-42 emissions factors and NO<sub>x</sub> allowable emissions rate – see Attachment 1

<sup>18</sup> Ecology Public Notice – January 4, 2017

<sup>19</sup> NOC Application – September 27, 2016

<sup>20</sup> TVAOP No. 08AQ-E253 – April 22, 2010

<sup>21</sup> WAC 173-401-620(2)(j)

<sup>22</sup> TVAOP No. 08AQ-E253 – April 22, 2010



**Table 2.2 Potential-to-Emit for Chipper/Debarker Project**

Potential Emissions (tons/year) <sup>†</sup>				
Source	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	VOC
Debarker	1.08	0.54	0.27	
Chipper	0.9	0.45	0.23	
Chip Screener	0.011	0.0054	0.0008	
Chip Conveyor	0.017	0.0081	0.0012	
Bark Handling	0.0091	0.0043	0.00065	
Reject Chip Handling	0.0017	0.00081	0.00012	
Temporary Bark Pile	0.0096	0.00087	0.00044	
Temporary Reject Chip Pile	0.0096	0.00087	0.00044	
Bark/Reject Chip Storage Pile	0.287	0.026	0.013	
Paved Road Dust Fugitives	1.58	0.3	0.08	
Unpaved Road Dust Fugitives	9.31	2.7	0.27	
Log Yard	27.07	7.7	0.77	0.01
<b>Total</b>	<b>40.29</b>	<b>11.7</b>	<b>1.6</b>	<b>0.01</b>

<sup>†</sup> PTE from Technical Support Document for Order 16AQ-E032

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### 3. Conclusions and Recommendations

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After reviewing the available documents, SC&A has determined the following:

1. Ecology has issued a preliminary determination approving the NOC for the chipper/debarker project. There is insufficient information to recommend that Ecology disapprove the NOC.
2. PNC has conducted air emissions modeling as part of its impact analysis for the chipper/debarker project, but only the model results were included in the September 27, 2016 NOC application. These results demonstrate that the entire site and the proposed chipper/debarker project do not exceed the NAAQS for PM<sub>10</sub> or PM<sub>2.5</sub> but do not indicate the location of increased PM emissions.
3. The maximum modeled concentration for 24-hour PM<sub>10</sub> and PM<sub>2.5</sub> from the chipper/debarker project (Table 1.1) are lower than the same maximum modeled concentrations for the entire facility (Table 1.2). Since only the model results were included in the NOC application, the reason for this discrepancy is unknown. Both models should include receptors at the same locations. If the PM<sub>10</sub> 24-hour maximum modeled concentration from the chipper/debarker is combined with the 24-hour PM<sub>10</sub> background concentration, the result is 146 µg/m<sup>3</sup> or 97% of the PM<sub>10</sub> 24-hour NAAQS.
4. There was no evidence in the documents reviewed that ozone air quality impacts from VOC and NO<sub>x</sub> emissions were determined or reviewed when PNC modified its permits to increase VOC and NO<sub>x</sub> emissions limits after failing emissions tests in 2002 and 2006.
5. The Nebraska boiler was not included in the facility-wide PTE determination in the Final Statement of Basis for TVAOP No. 08AQE-253. Since neither permit prohibits simultaneous operation of the Nebraska boiler and FBB, the Nebraska boiler should be included in the facility-wide PTE. If the Nebraska boiler was included in the facility-wide PTE, PNC would be considered a Title V major source for NO<sub>x</sub> and a could be considered a PSD major source for VOC (ozone), as the total facility-wide VOC emissions would equal 250 tpy, the PSD major source threshold.

The following actions are recommended:

1. The Kalispel Tribe should request an in-person meeting with Ecology to discuss the model in the 16AQ-E032 NOC application. During this meeting, the tribe can better understand where the increased PM<sub>10</sub> and PM<sub>2.5</sub> emissions are expected to occur, in relation to tribal lands, and request an explanation of the discrepancy between the chipper/debarker project and facility-wide maximum modeled concentration for the 24-hour PM<sub>10</sub>.
  2. The Kalispel Tribe should review the 2003 and 2006 NOC applications to amend Order 00AQER-1819 to determine the ozone air impact analyses from VOC and NO<sub>x</sub>. If air impacts were not addressed in either application, the Kalispel Tribe should request that an air impact analysis be conducted for ozone from VOC and NO<sub>x</sub>.
  3. The Kalispel Tribe should request Ecology explain the basis for excluding the Nebraska boiler from the facility-wide PTE estimates and determine the VOC (ozone) PSD major source status for the facility, including the Nebraska boiler.
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## Attachment 1: Nebraska Boiler PTE Calculations

Nebraska Boiler Potential Emissions (tons/year)				
CO	NO <sub>x</sub>	PM	SO <sub>2</sub>	VOC
22.5 tpy	13.7 tpy	2.1 tpy	0.04 tpy	2.4 tpy
Source Data & Emissions Factors				
Givens:	Units	Source		
Propane High Heat Value	0.091 mmBtu/gal.	40 CFR, Part 98, Table C-1		
Maximum Fuel Rate	6,000 10 <sup>3</sup> gal./year	From NOC 00AQER-1819		
Sulfur Content	185 ppmw	GPA Standard 2140-92		
Sulfur Content	0.146 gr/100 ft <sup>3</sup>	ppmw×7,000 gr/lb ÷ (8.84 ft <sup>3</sup> /lb × 1×10 <sup>-6</sup> )		
PM Emissions Factor	0.7 lbs./10 <sup>3</sup> gal.	AP-42, Table 1.5-1		
SO <sub>2</sub> Emissions Factor	0.0146 lbs./10 <sup>3</sup> gal.	AP-42, Table 1.5-1 (0.1×S Cnt. gr/100ft <sup>3</sup> )		
NO <sub>x</sub> Emissions Factor	0.05 lbs./mmBtu	From NOC 00AQER-1819		
CO Emissions Factor	7.5 lbs./10 <sup>3</sup> gal.	AP-42, Table 1.5-1		
VOC Emissions Factor	0.8 lbs./10 <sup>3</sup> gal.	AP-42, Table 1.5-1 (TOC - CH <sub>4</sub> )		
Calculations				
<b>CO, PM, SO<sub>2</sub>, VOC (tpy):</b> Emissions Factor (lbs./10 <sup>3</sup> gal) × Maximum Fuel Rate (10 <sup>3</sup> gallons/year) ÷ 2,000 lbs./ton				
<b>NOX (tpy):</b> Emissions factor (lbs./mmBtu) × Propane High Heat Value (mmBtu/gal.) × Maximum Fuel Rate (10 <sup>3</sup> gallons/year) ÷ 2,000 lbs./ton				
Notes				
1. All emissions factors (except NO <sub>x</sub> ) from AP-42, 5 <sup>th</sup> Edition Compilation of Air Pollutant Emissions Factors, Chapter 1.5 2. VOC emissions factor excludes methane, which is not a VOC, from the Total Organic Compounds emissions factor in AP-42, Table 1.5-1 3. NO <sub>x</sub> emissions factor and 6 million gal./year maximum fuel rate from NOC 00AQER-1819 4. Sulfur content of commercial propane is limited to 185 ppm by weight from Gas Processors Association (GPA) standard 2140-92 5. Propane High Heat Value from Title 40 of the Code of Federal Regulation (CFR), Part 98, Subpart C, Table C-1				